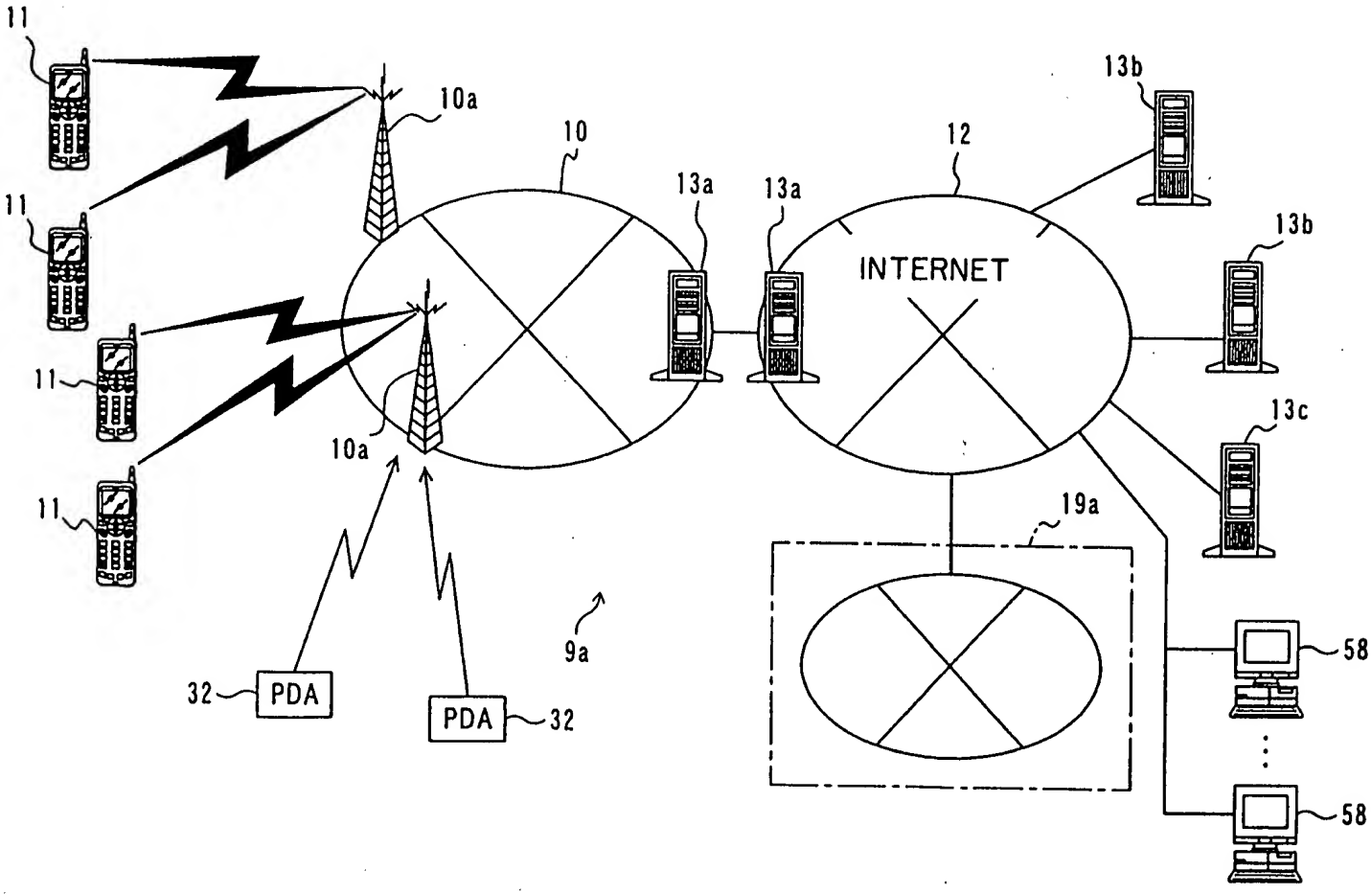
FIG. 1


11
11
11
11
10a
10a
10
13a
13a
12
13b
13b
13c
INTERNET
19a
9a
32
PDA
PDA
32
58
58

TO2290 "12268"

FIG. 2

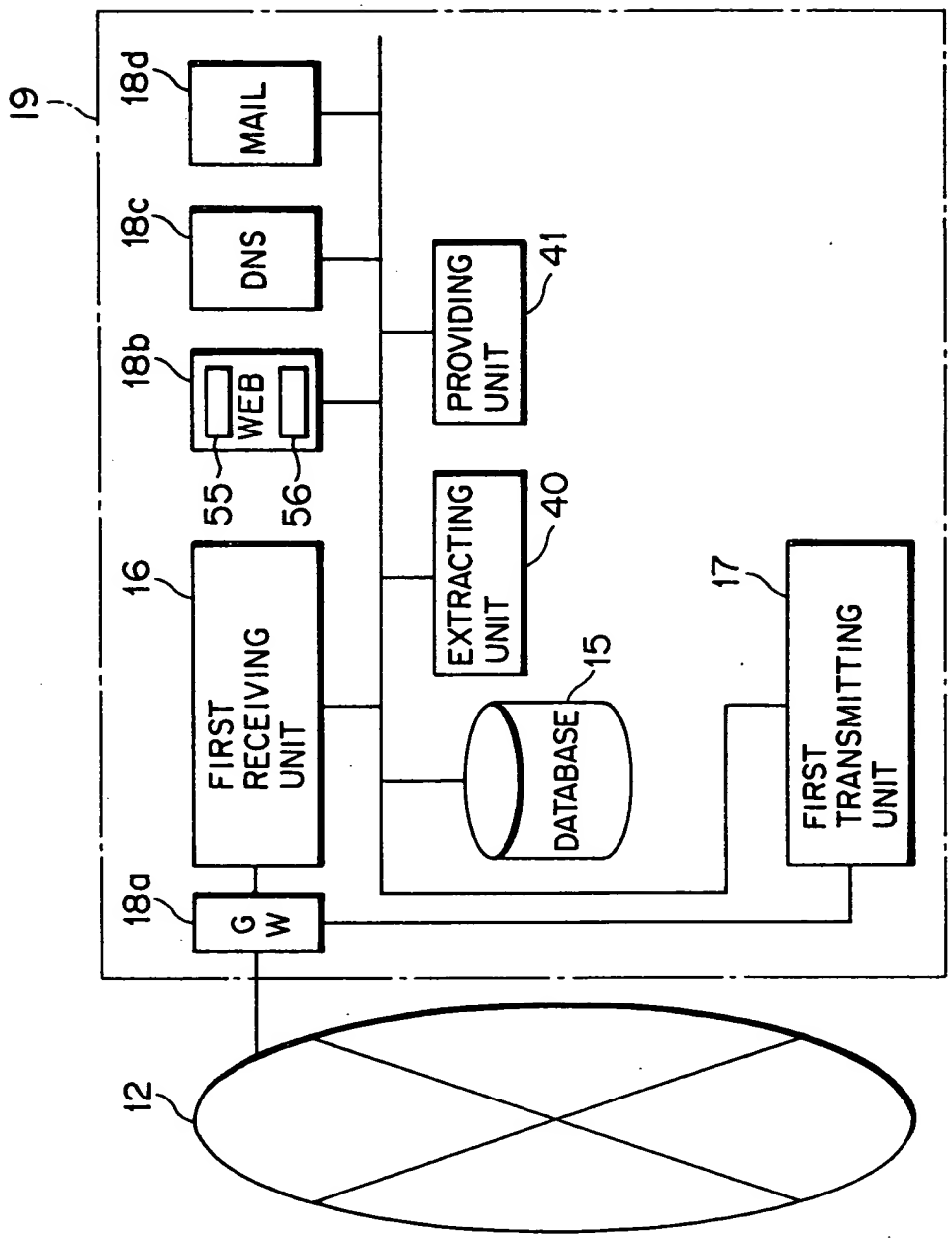


FIG. 3

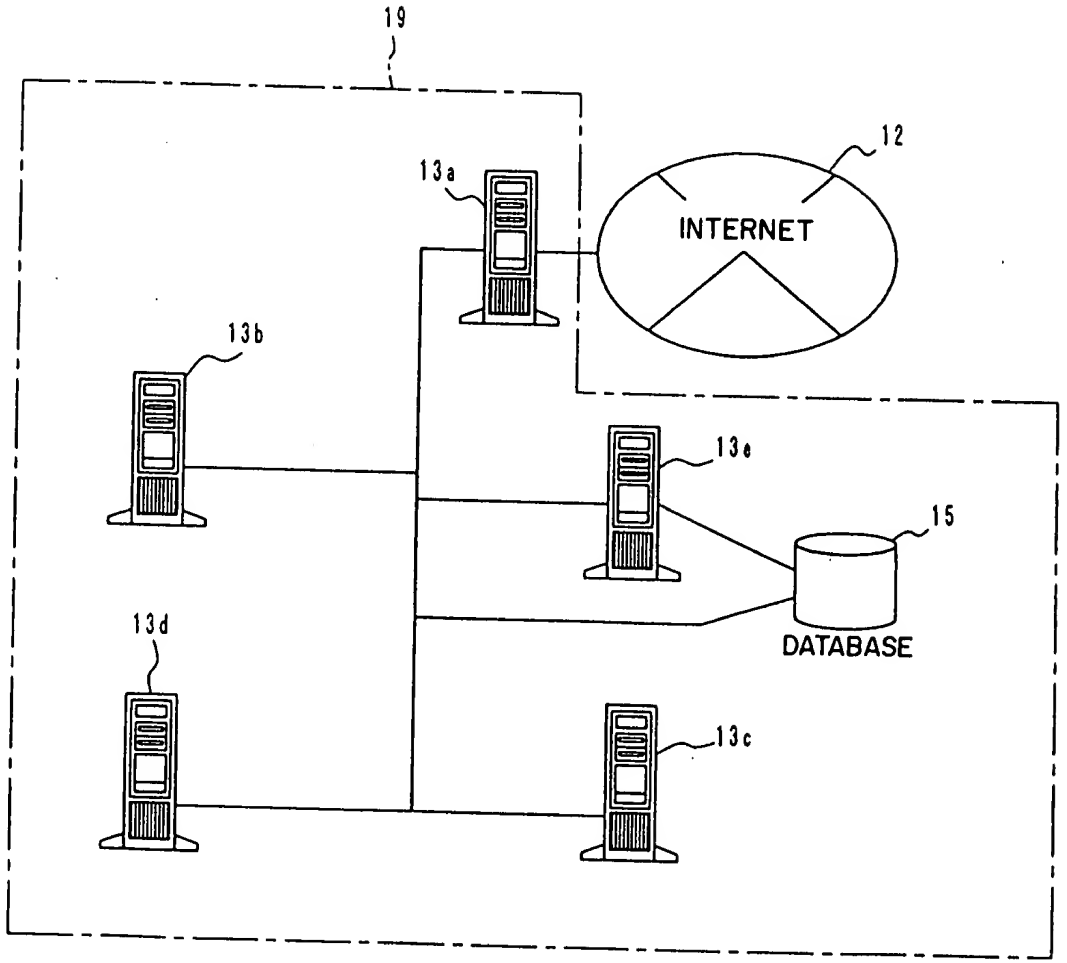


FIG. 4

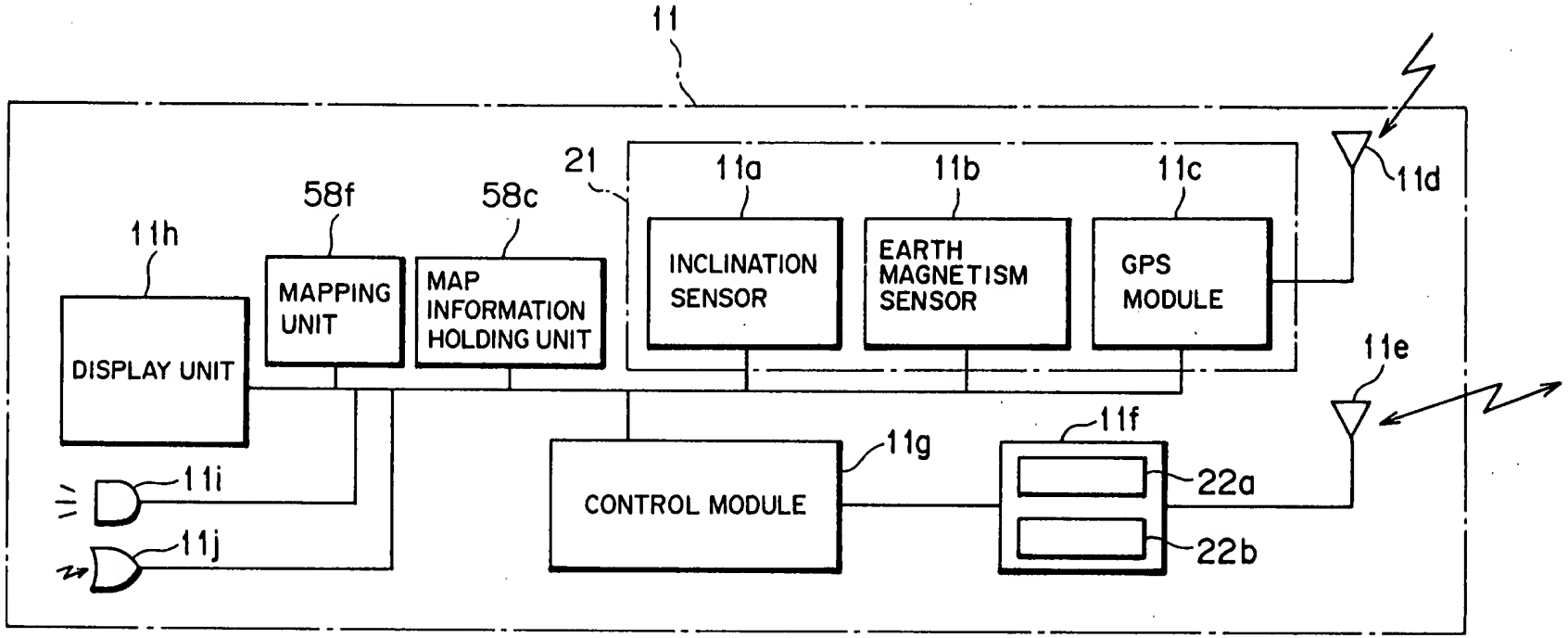

11
21
11a
11b
11c
11d
11e
11f
11g
11h
11i
11j
58f
58c
DISPLAY UNIT
MAPPING UNIT
MAP INFORMATION HOLDING UNIT
INCLINATION SENSOR
EARTH MAGNETISM SENSOR
GPS MODULE
CONTROL MODULE
22a
22b

FIG. 5

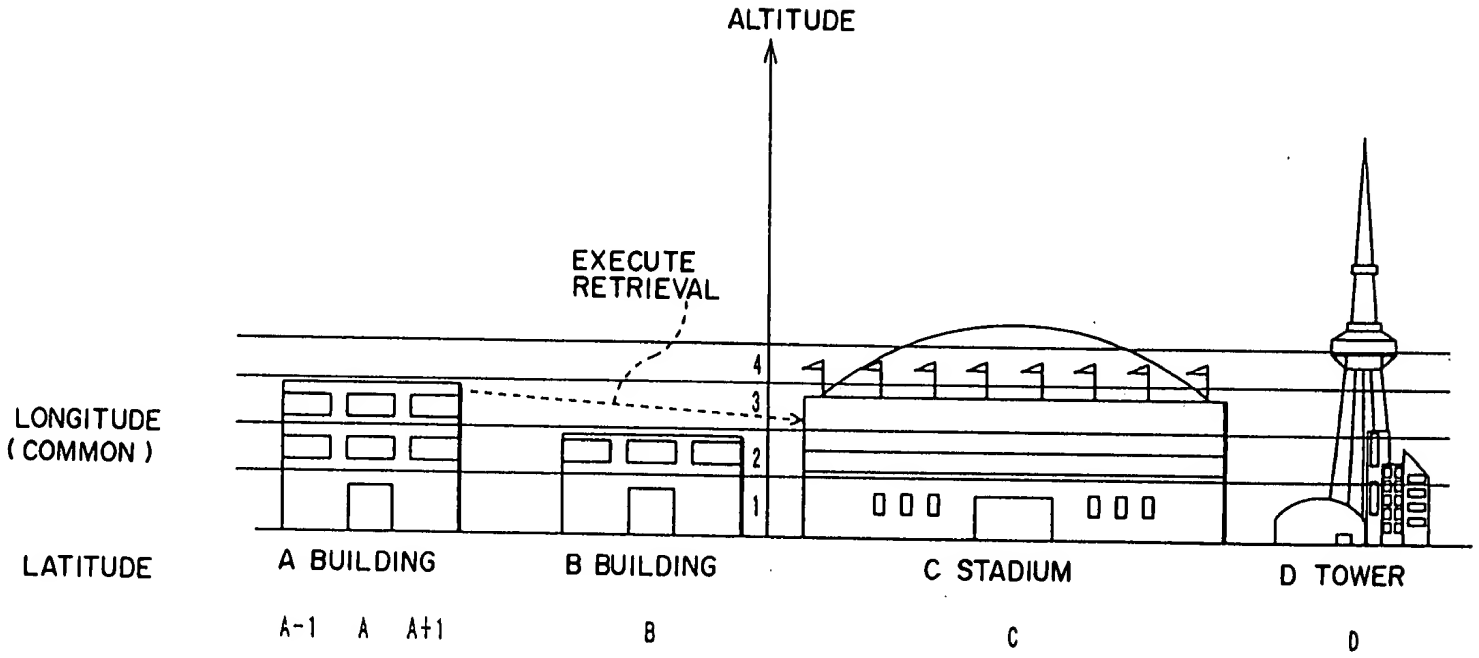

ALTITUDE
EXECUTE
RETRIEVAL
4
3
2
1
LONGITUDE
(COMMON)
LATITUDE
A BUILDING
B BUILDING
C STADIUM
D TOWER
A-1 A A+1
B
C
D

FIG. 6

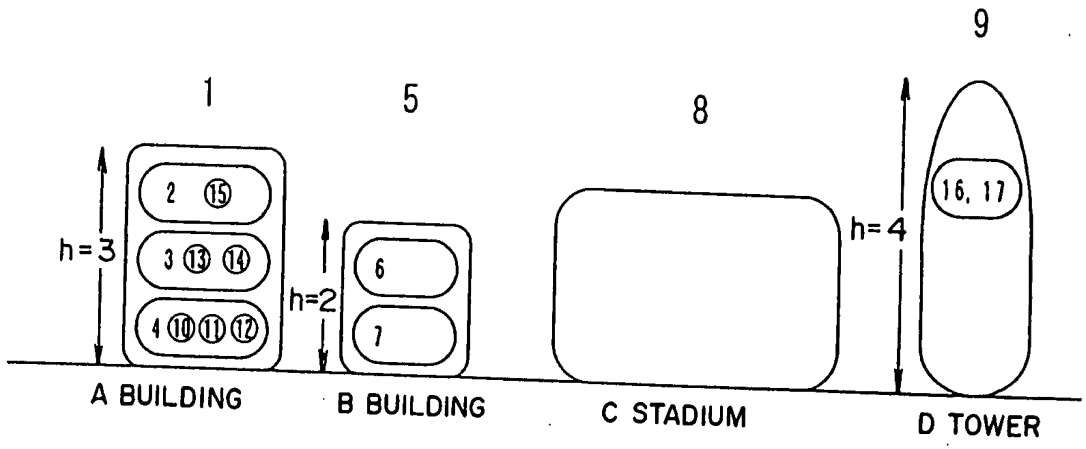

1
5
8
9
h=3
h=2
h=4
2 ⑮
3 ⑬ ⑭
4 ⑩ ⑪ ⑫
6
7
16, 17
A BUILDING
B BUILDING
C STADIUM
D TOWER

FIG. 7

15(15a)

BUBBLE NUMBER	SPATIAL OCCUPANCY INFORMATION	URL	ATTRIBUTE INFORMATION
1	A/X/0/3	http://www.xxx:100	PUB
2	A/X/3/1	http://www.xxx:101	HOSPITAL (SURGERY)
3	A/X/3/1	http://www.xxx:101	HOSPITAL (INTERNAL)
4	A/X/3/1	http://www.xxx:101	HOSPITAL (STOMACH AND INTESTINAL)
5	A/X/3/1	http://www.xxx:101	HOSPITAL (NOSE AND EAR)
6	A/X/2/1	http://www.xxx:102	HOTEL
7	A/X/1/1	http://www.xxx:103	GASOLINE STATION
8	B/X/0/2	http://www.xxx:200	PREPARATORY SCHOOL (TENTH-GRADE)
9	B/X/0/2	http://www.xxx:200	PREPARATORY SCHOOL (TWELFTH-GRADE)
10	B/X/2/1	http://www.xxx:201	ITALIAN RESTAURANT
11	B/X/1/1	http://www.xxx:202	TAX OFFICE
12	C/X/0/3	http://www.xxx:300	STADIUM
13	D/X/0/4	http://www.xxx:400	RADIO TOWER
14	A-1/X/1/0.5	http://www.xxx:110	RESTAURANT
15	1/X/1/0.5	http://www.xxx:111	STATION
16	A+1/X/1/0.5	http://www.xxx:112	FIREHOUSE
17	A-1/X/2/0.5	http://www.xxx:120	TEMPLE
18	A/X/2/0.5	http://www.xxx:121	ELECTRIC APPLIANCES STORE (PERSONAL COMPUTER)
19	A/X/2/0.5	http://www.xxx:121	ELECTRIC APPLIANCES STORE (CELL PHONE)
20	A/X/2/0.5	http://www.xxx:121	ELECTRIC APPLIANCES STORE (REFRIGERATOR)
21	A/X/3/0.5	http://www.xxx:130	CHINESE RESTAURANT
22	D/X/4/0.5	http://www.xxx:410	ART MUSEUM
23	D/X/4/0.5	http://www.xxx:411	BOOK STORE

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FIG. 8

BUBBLE NUMBER	SPACIAL OCCUPANCY INFORMATION (LATITUDE / LONGITUDE ALTITUDE / BUBBLE DIAMETER)	OBJECT URL	CONTENT NAME
1	149° 22′ 20″ / 62° 11′ 11″ /30/5	http://www.nifty.ne.jp/ gps/user/mori/index.html	A BUILDING
2	149° 21′ 15″ / 62° 09′ 04″ /15/20	http://www.nifty.ne.jp/ gps/user/yashi/index.html	B RESTAURANT
3	149° 19′ 12″ / 62° 14′ 07″ /50/200	http://www.nifty.ne.jp/ gps/com/fujitsu/index.html	C STADIUM
4			

FIG. 9(a)

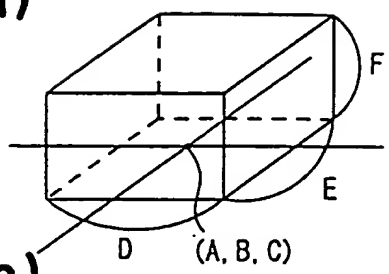

FIG. 9(b)

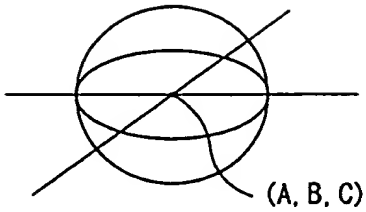

FIG. 9(c)

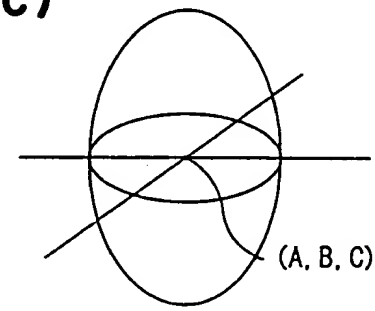

FIG. 9(d)

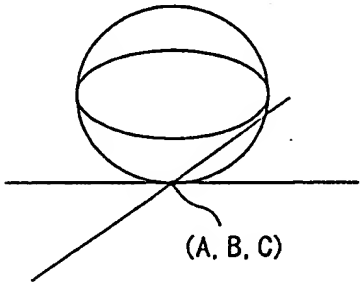

FIG. 9(e)

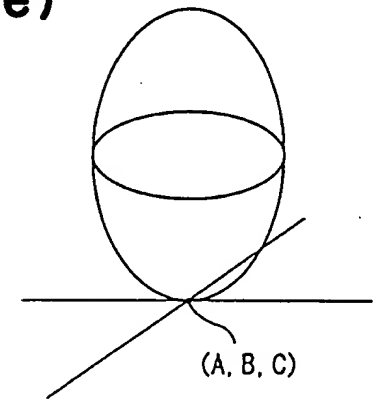

FIG. 9(f)

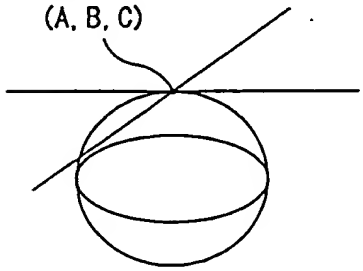

FIG. 9(g)

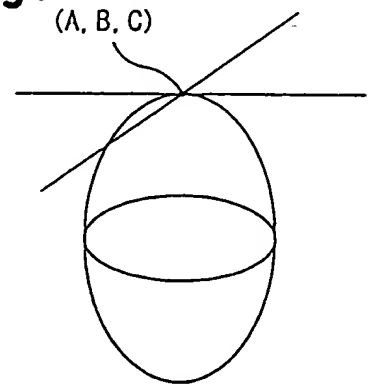

FIG. 9(h)

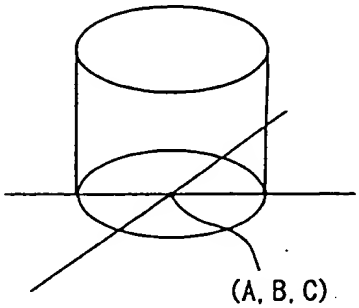

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FIG. 10

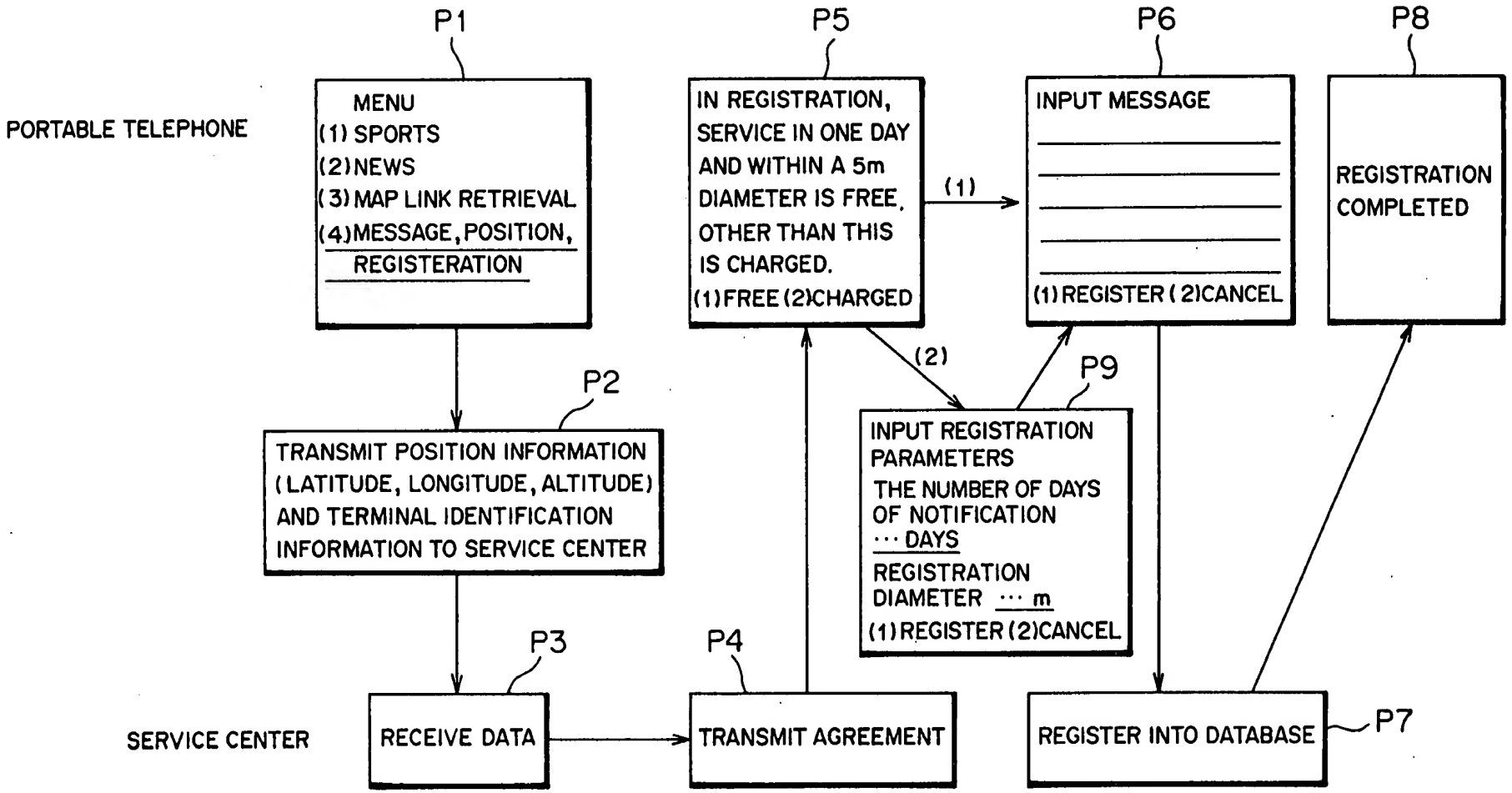

P1
P5
P6
P8
PORTABLE TELEPHONE
MENU
(1) SPORTS
(2) NEWS
(3) MAP LINK RETRIEVAL
(4) MESSAGE, POSITION, REGISTERATION
IN REGISTRATION, SERVICE IN ONE DAY AND WITHIN A 5m DIAMETER IS FREE. OTHER THAN THIS IS CHARGED.
(1) FREE (2) CHARGED
(1)
INPUT MESSAGE
(1) REGISTER (2) CANCEL
REGISTRATION COMPLETED
(2)
P2
P9
TRANSMIT POSITION INFORMATION (LATITUDE, LONGITUDE, ALTITUDE) AND TERMINAL IDENTIFICATION INFORMATION TO SERVICE CENTER
INPUT REGISTRATION PARAMETERS
THE NUMBER OF DAYS OF NOTIFICATION ··· DAYS
REGISTRATION DIAMETER ··· m
(1) REGISTER (2) CANCEL
P3
P4
SERVICE CENTER
RECEIVE DATA
TRANSMIT AGREEMENT
REGISTER INTO DATABASE
P7

FIG. 11

BUBBLE DIAMETER	INFORMATION NOTIFICATION TIME (DAY)	CHARGE	NOTE
5	1 DAY 2 WEEKS 3 MONTHS	0YEN 100YEN 1000YEN	PERSNAL USE USE TO COLLECT MEMBERS OF A CIRCLE OR THE LIKE MENU OF ONE-MAN SHOP
20	1 DAY 2 WEEKS	1000YEN 5000YEN	AD. OF BARGAIN SALE ROAD GUIDANCE
50	1 DAY 1 WEEK	2000YEN 10000YEN	FESTIVAL GUIDANCE
100	1 MONTH 6 MONTHS	100000YEN 500000YEN	COMPANY AD. (COMPANY PROFILE)

FIG. 12

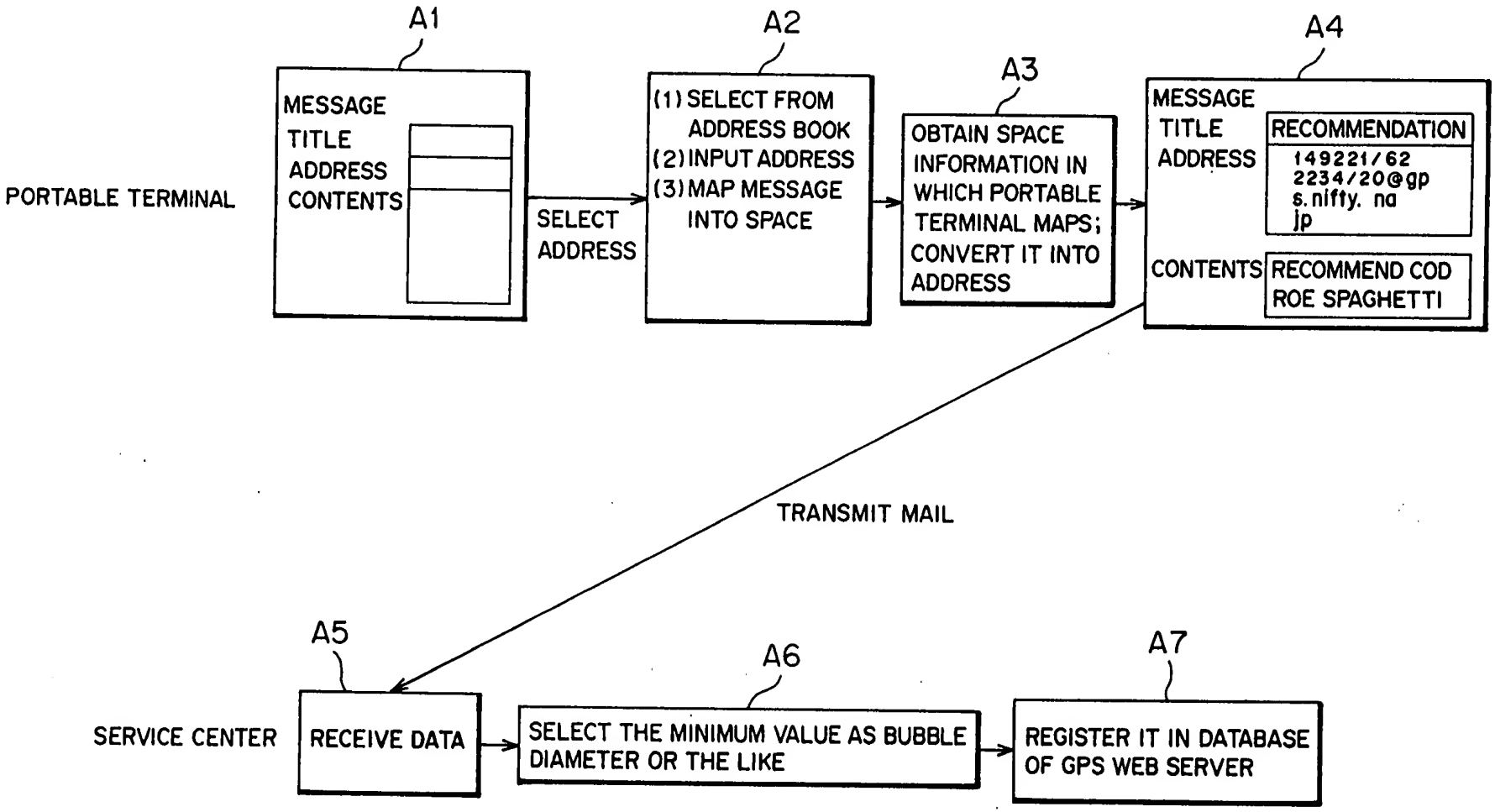
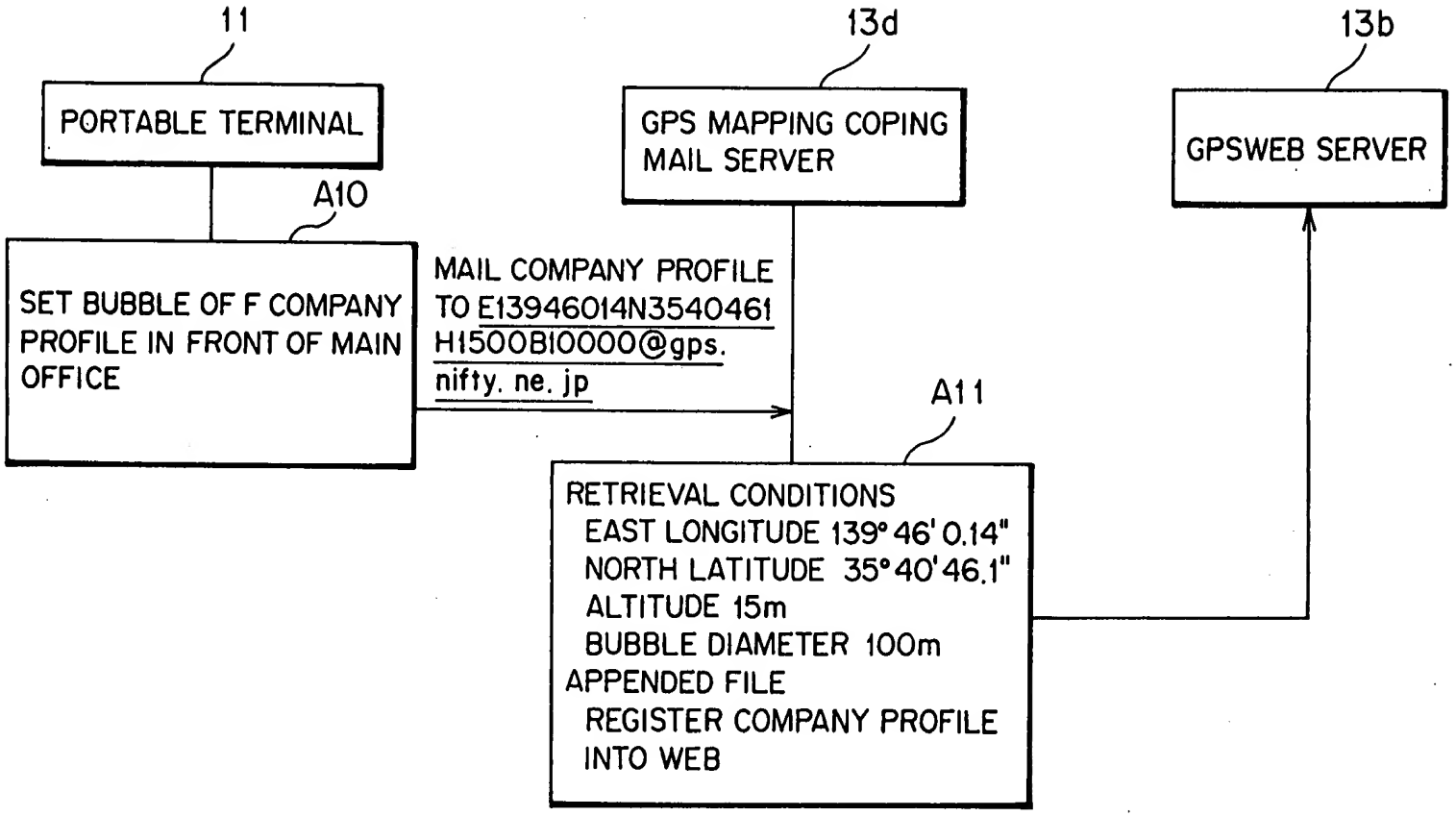

A1
A2
A3
A4
MESSAGE
TITLE
ADDRESS
CONTENTS
PORTABLE TERMINAL
SELECT ADDRESS
(1) SELECT FROM ADDRESS BOOK
(2) INPUT ADDRESS
(3) MAP MESSAGE INTO SPACE
OBTAIN SPACE INFORMATION IN WHICH PORTABLE TERMINAL MAPS; CONVERT IT INTO ADDRESS
MESSAGE
TITLE
ADDRESS
RECOMMENDATION
149221/62
2234/20@gp
s.nifty. na
jp
CONTENTS
RECOMMEND COD
ROE SPAGHETTI
TRANSMIT MAIL
A5
A6
A7
SERVICE CENTER
RECEIVE DATA
SELECT THE MINIMUM VALUE AS BUBBLE DIAMETER OR THE LIKE
REGISTER IT IN DATABASE OF GPS WEB SERVER

FIG. 13


11
PORTABLE TERMINAL
A10
SET BUBBLE OF F COMPANY PROFILE IN FRONT OF MAIN OFFICE
MAIL COMPANY PROFILE TO E13946014N3540461 H1500B10000@gps. nifty. ne. jp
13d
GPS MAPPING COPING MAIL SERVER
A11
RETRIEVAL CONDITIONS
EAST LONGITUDE 139° 46' 0.14"
NORTH LATITUDE 35° 40' 46.1"
ALTITUDE 15m
BUBBLE DIAMETER 100m
APPENDED FILE
REGISTER COMPANY PROFILE INTO WEB
13b
GPSWEB SERVER

T07290 "T2726860

FIG. 14

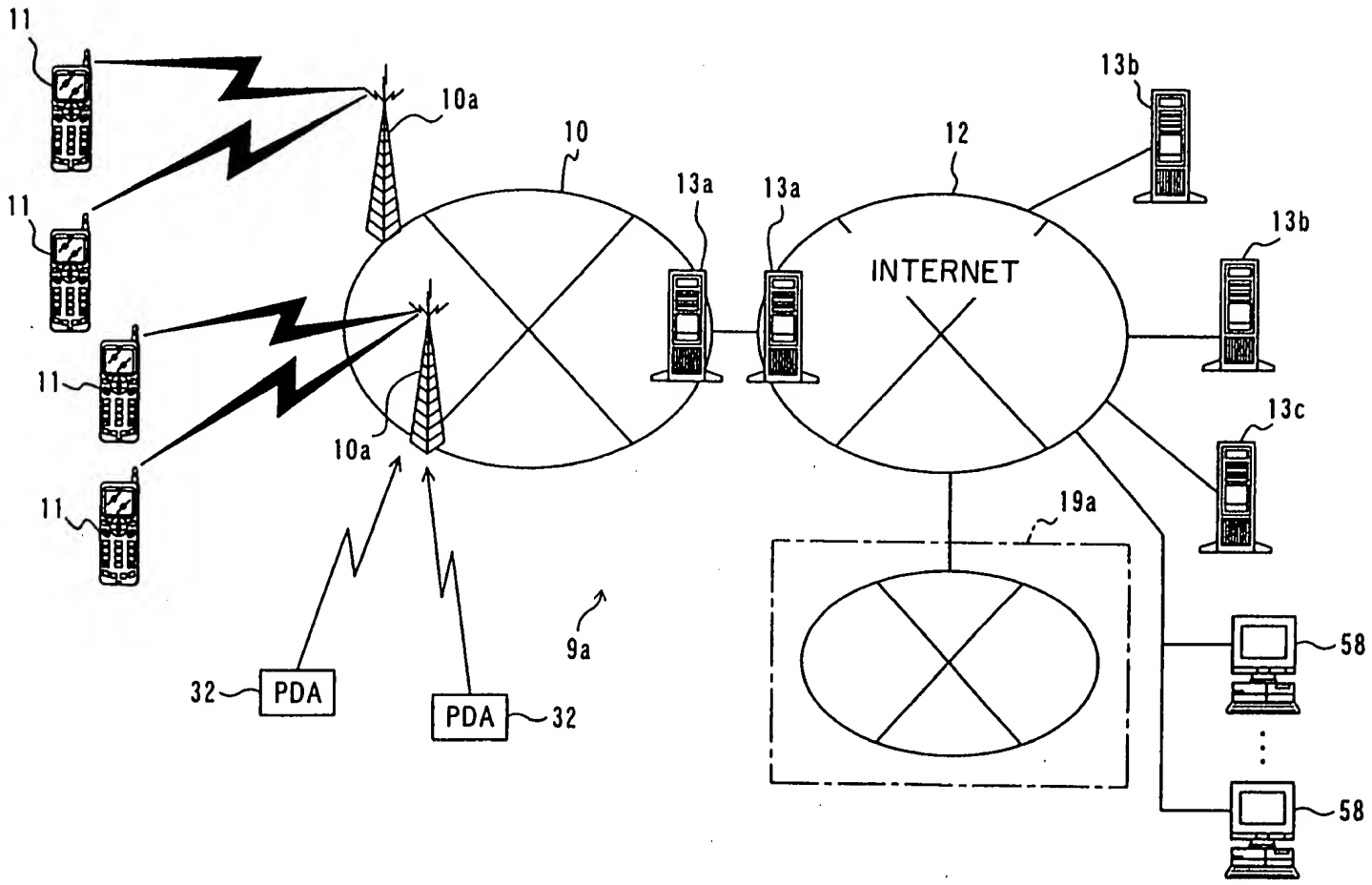


FIG. 15

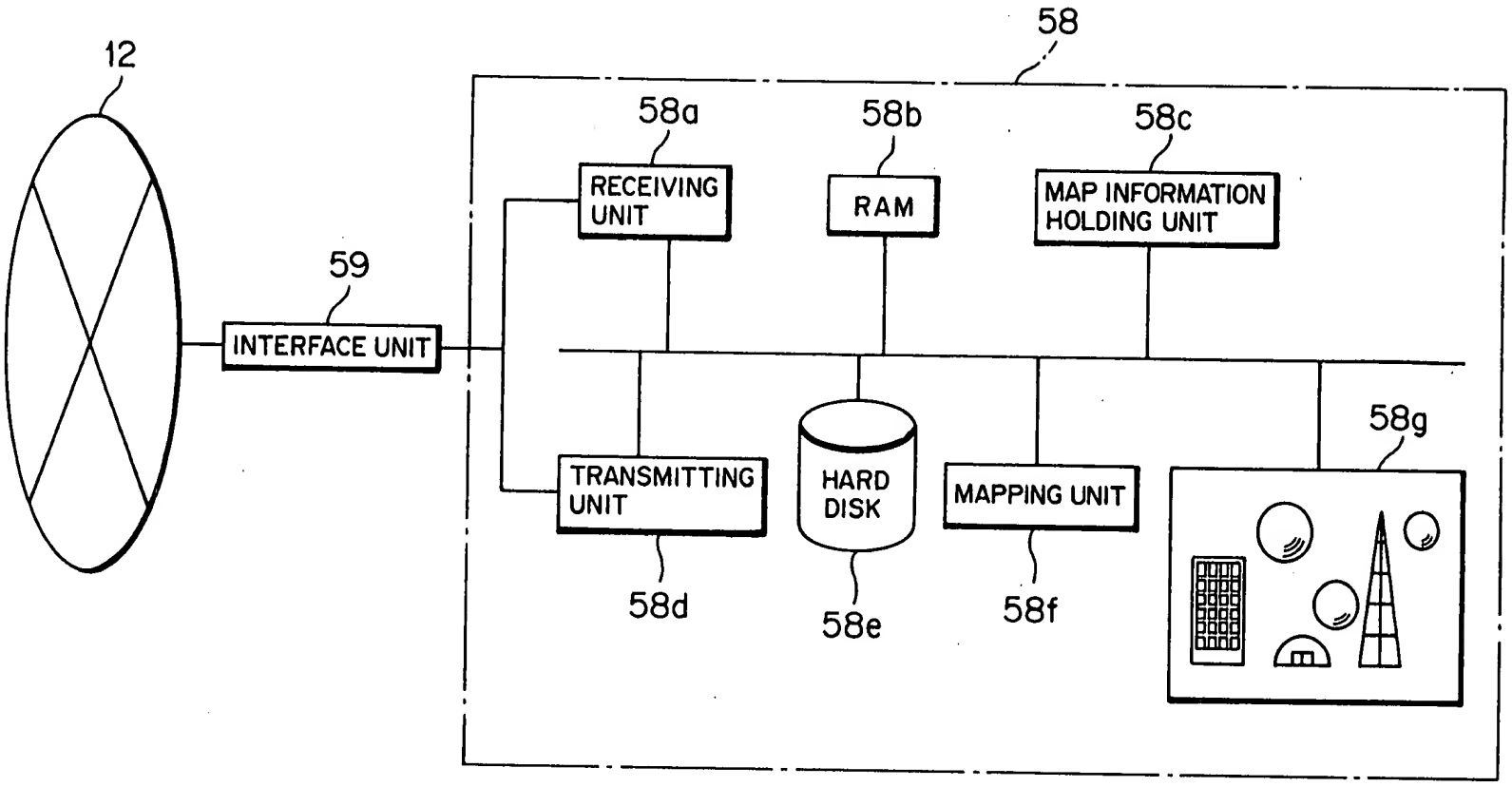

12
58
58a
58b
58c
RECEIVING UNIT
RAM
MAP INFORMATION HOLDING UNIT
59
INTERFACE UNIT
TRANSMITTING UNIT
HARD DISK
MAPPING UNIT
58g
58d
58e
58f

FIG. 16

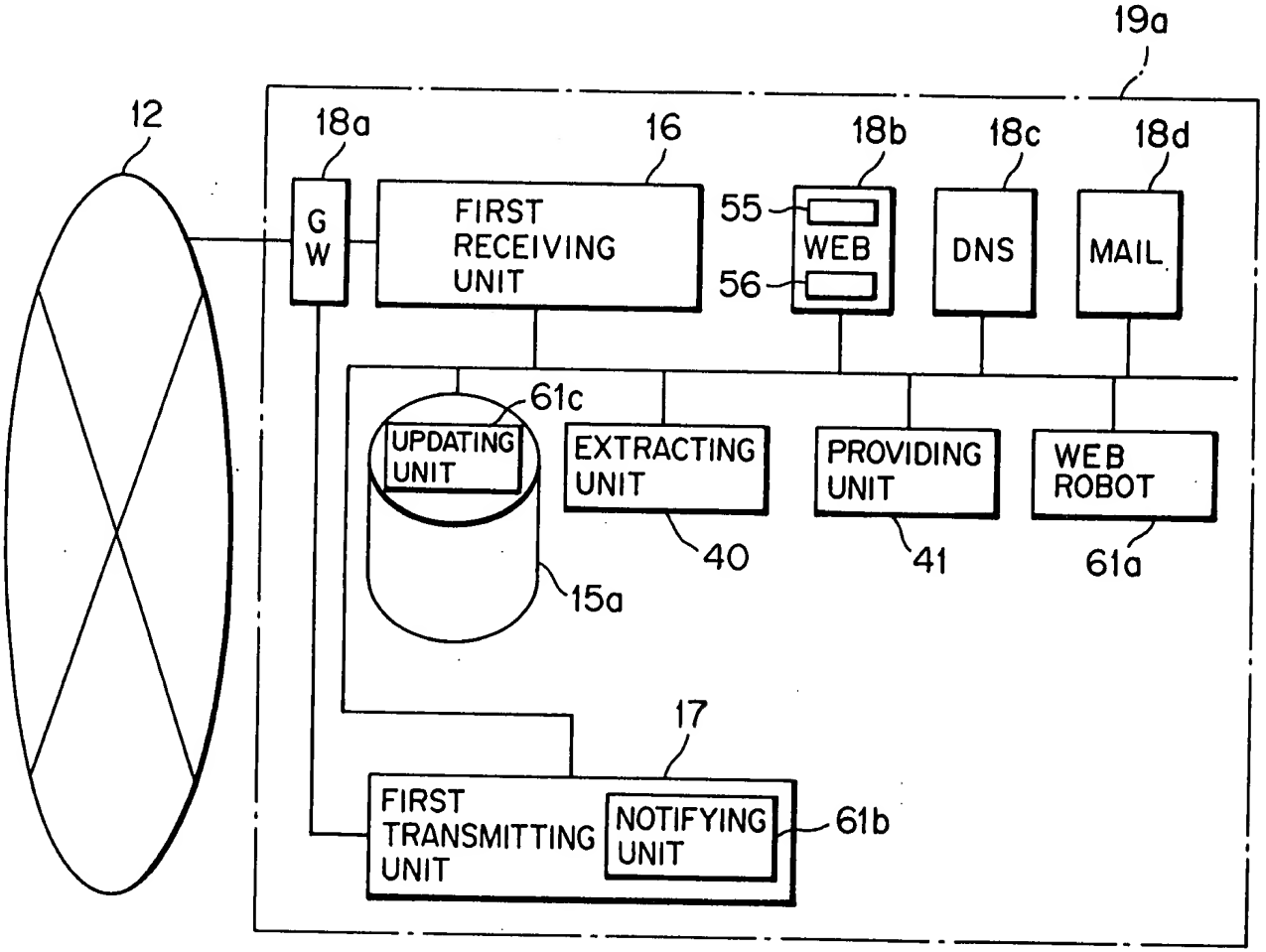

19a
12
18a
16
18b
18c
18d
G W
FIRST RECEIVING UNIT
55
56
WEB
DNS
MAIL
61c
UPDATING UNIT
EXTRACTING UNIT
PROVIDING UNIT
WEB ROBOT
40
41
61a
15a
17
FIRST TRANSMITTING UNIT
NOTIFYING UNIT
61b

FIG. 17

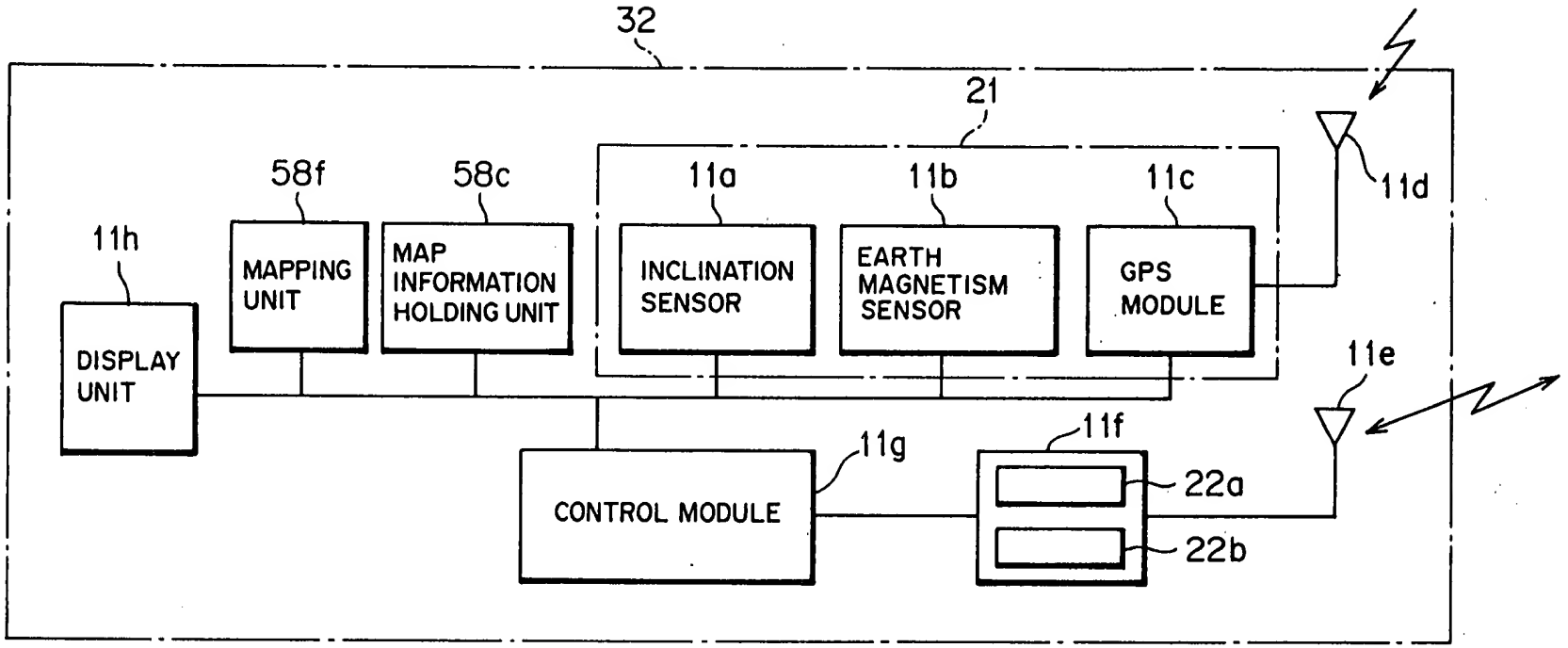
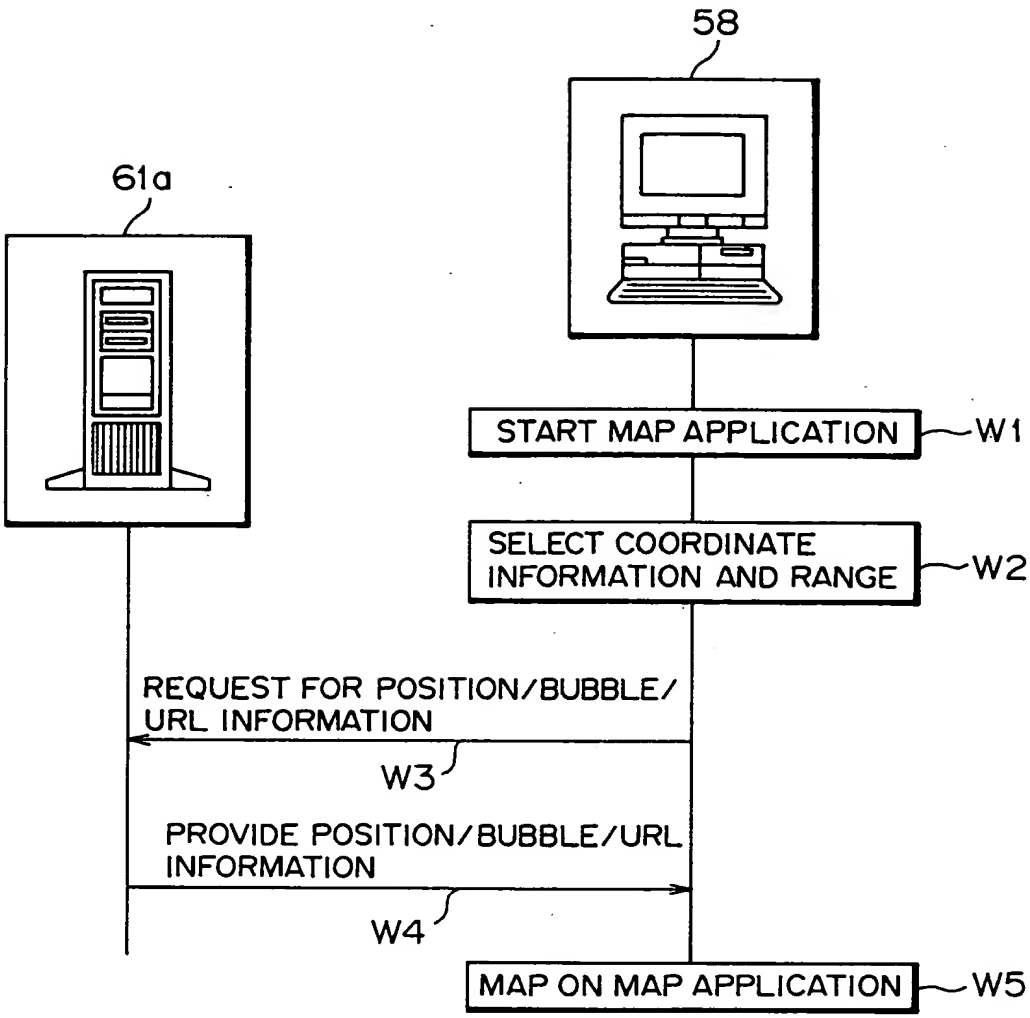

32
21
58f
58c
11a
11b
11c
11d
11h
MAPPING UNIT
MAP INFORMATION HOLDING UNIT
INCLINATION SENSOR
EARTH MAGNETISM SENSOR
GPS MODULE
DISPLAY UNIT
11e
11f
11g
CONTROL MODULE
22a
22b

FIG. 18



09827121-062704

09827421-062701

FIG. 19

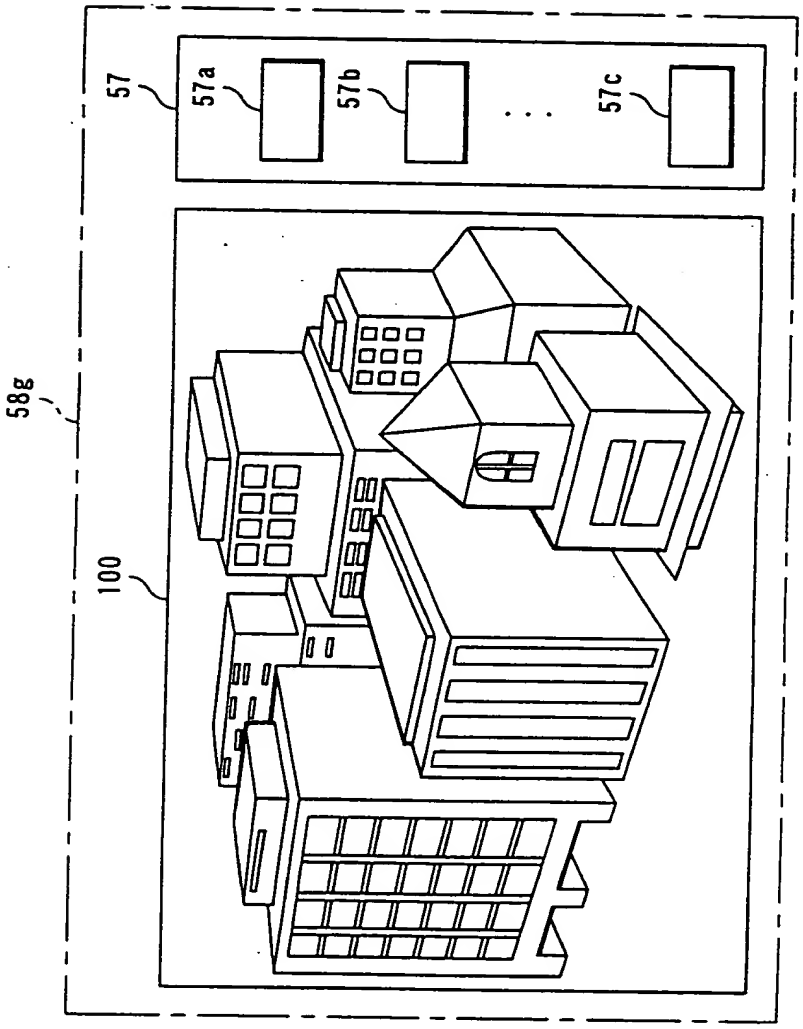


FIG. 20

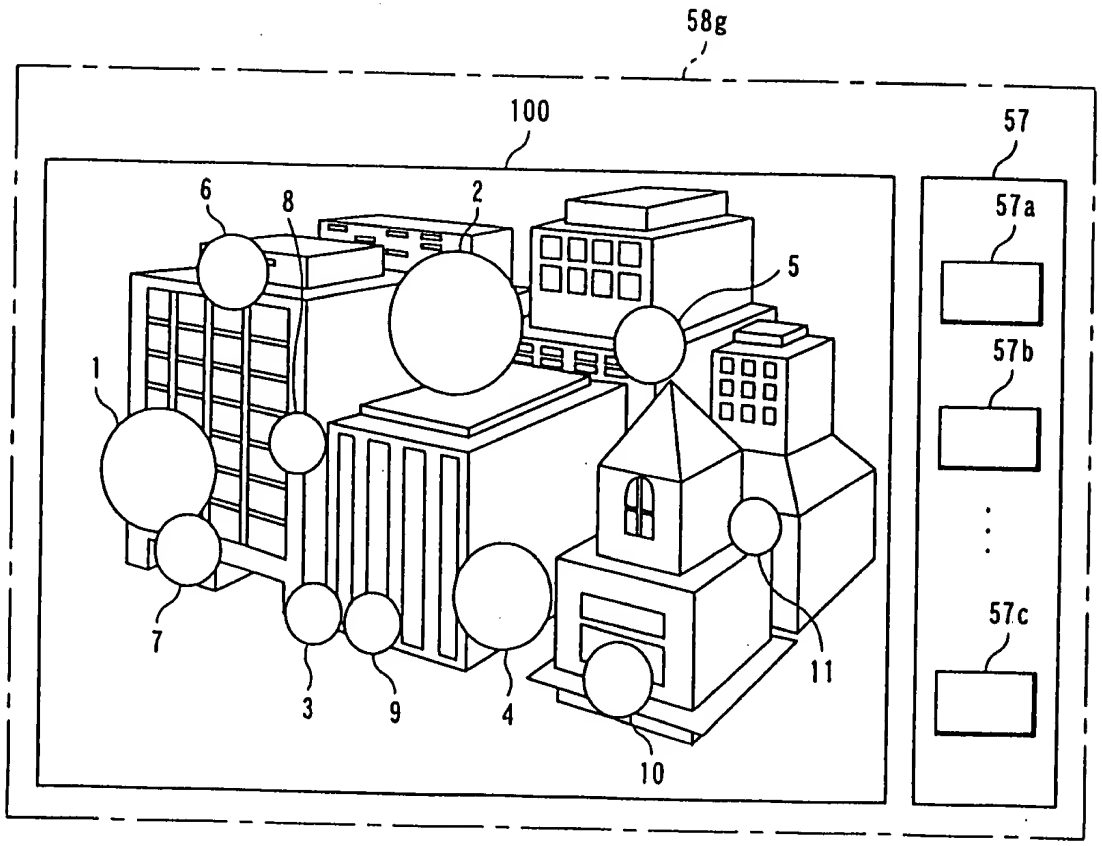


FIG. 21

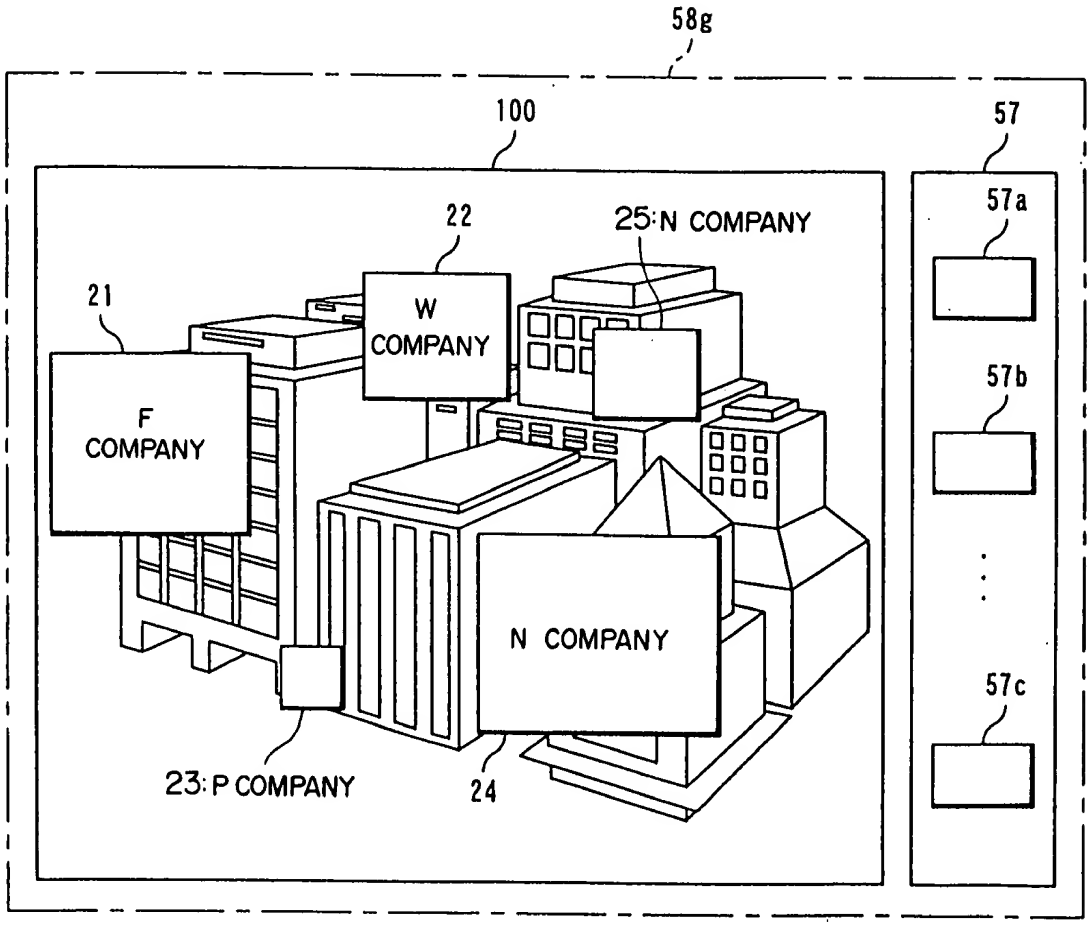

58g
100
57
57a
57b
57c
22
25:N COMPANY
21
W
COMPANY
F
COMPANY
N COMPANY
23:P COMPANY
24

FIG. 22

63

```
<bubble>
 <latitude>139, 46, 1.3</latitude>
 <longitude>35, 40, 45.7</longitude>
 <altitude>50</altitude>
 <size>dynamic50</size>
 <animation>honsya.gif</animation>
 <lifedate>01/04/27</lifedate>
</bubble>
```

LATITUDE 139° 46' 1.3"
LONGITUDE 35° 40' 45.7"
ALTITUDE 50m
BUBBLE DIAMETER 50m
DISPLAY CHARACTER honsya.gif
DISPLAYABLE DATE : UP TO 2001/04/27

FIG. 23(a)

CHILD ELEMENTS OF DTD INFORMATION
- LATITUDE, LONGITUDE, ALTITUDE
- BUBBLE DIAMETER
- DISPLAY ANIMATION
- ATTRIBUTE INFORMATION
- STARTUP APPLICATION
- STATE FILE NAME
- URL

FIG. 23(b)

STATE FILE
- LIFE COUNTER
- LIFE DATE
- STARTUP FILE NAME
- DYNAMIC BUBBLE DIAMETER
- ACCESS HISTORY

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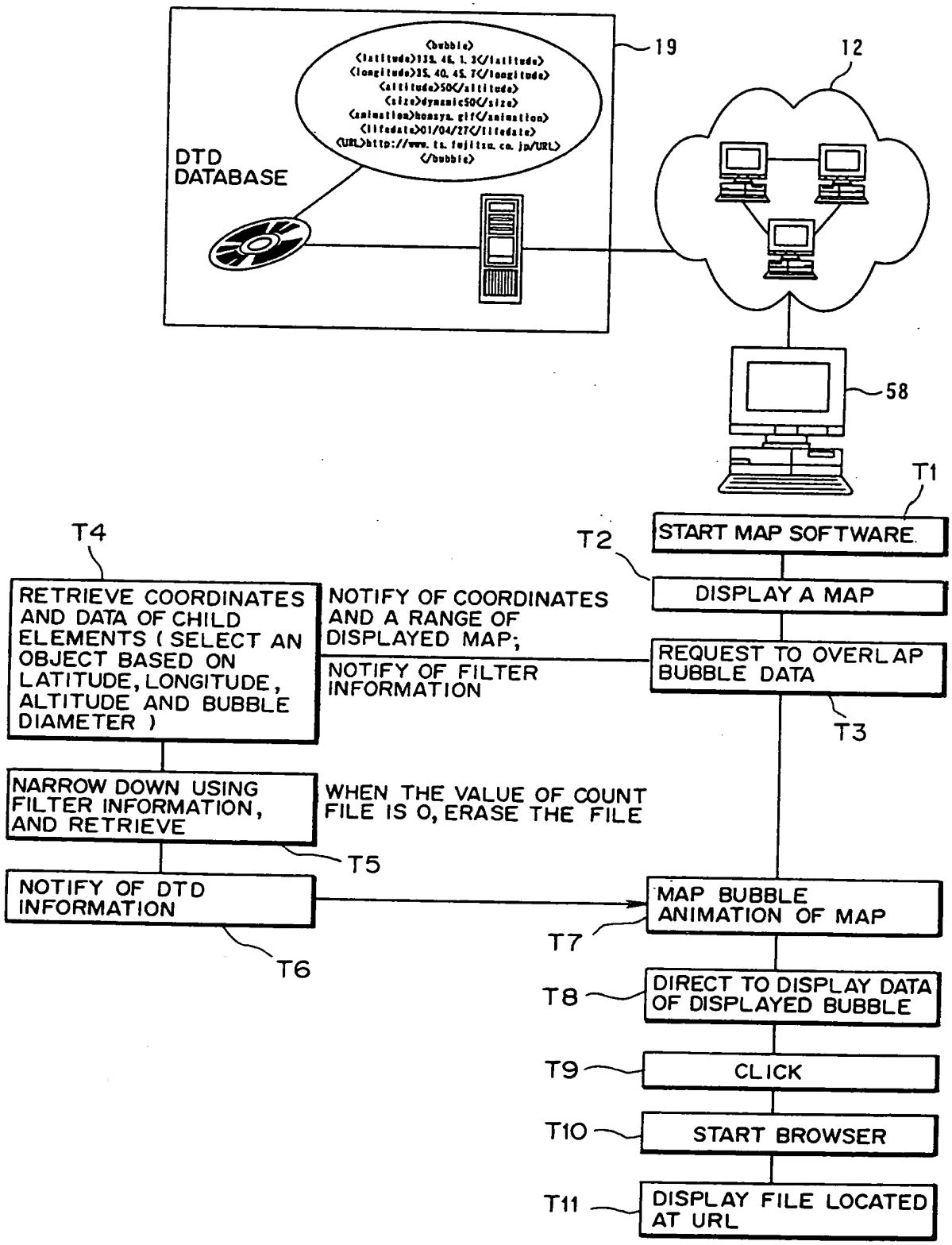
FIG. 24



0982721.062704

FIG. 25

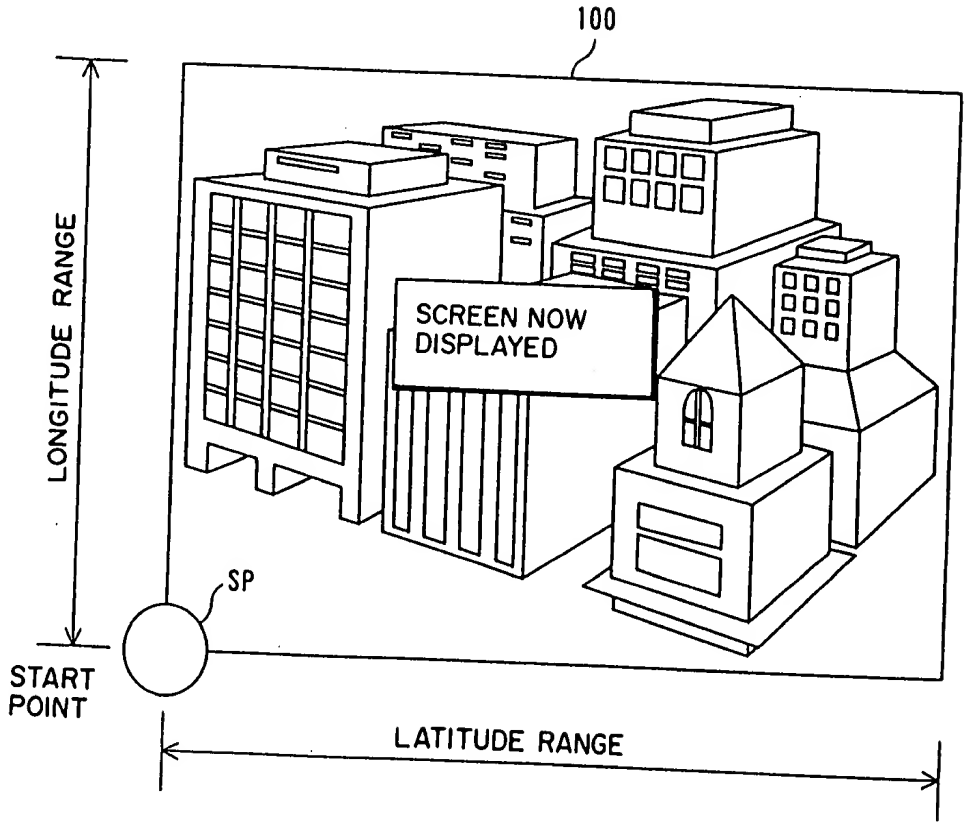

100
LONGITUDE RANGE
SCREEN NOW DISPLAYED
SP
START POINT
LATITUDE RANGE

FIG. 26

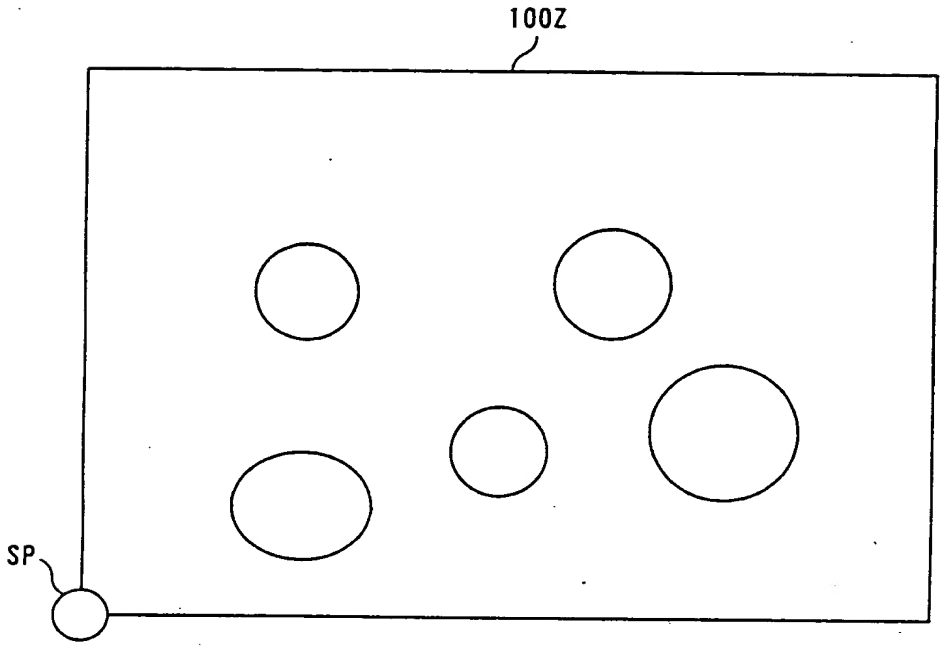


FIG. 27

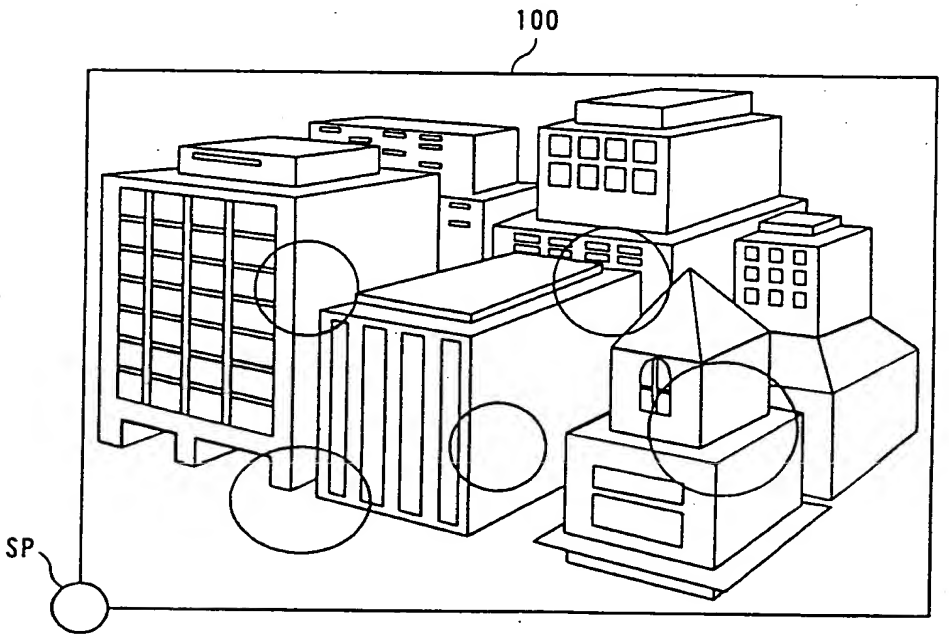


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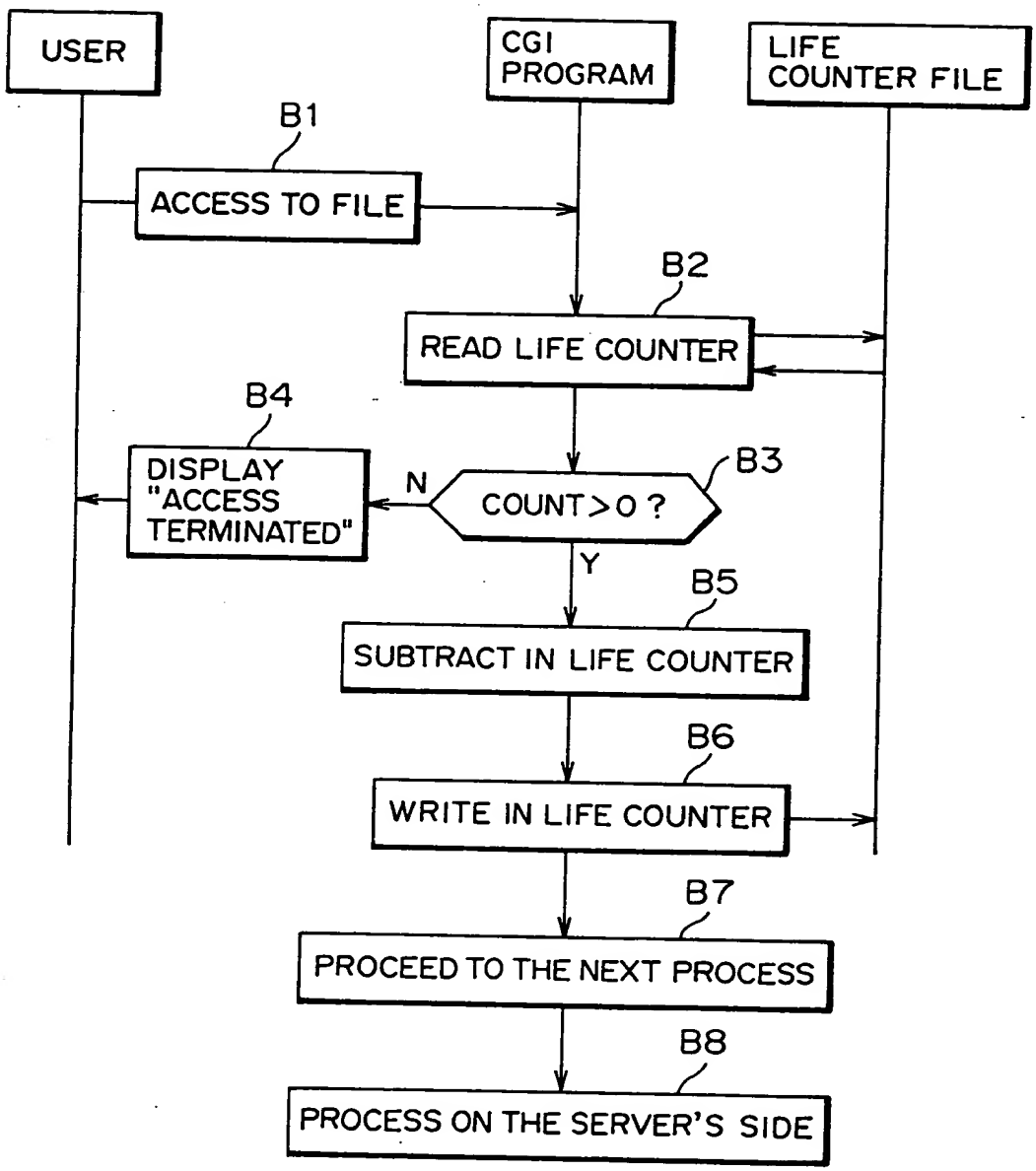
FIG. 28



0980521-052704

FIG. 29

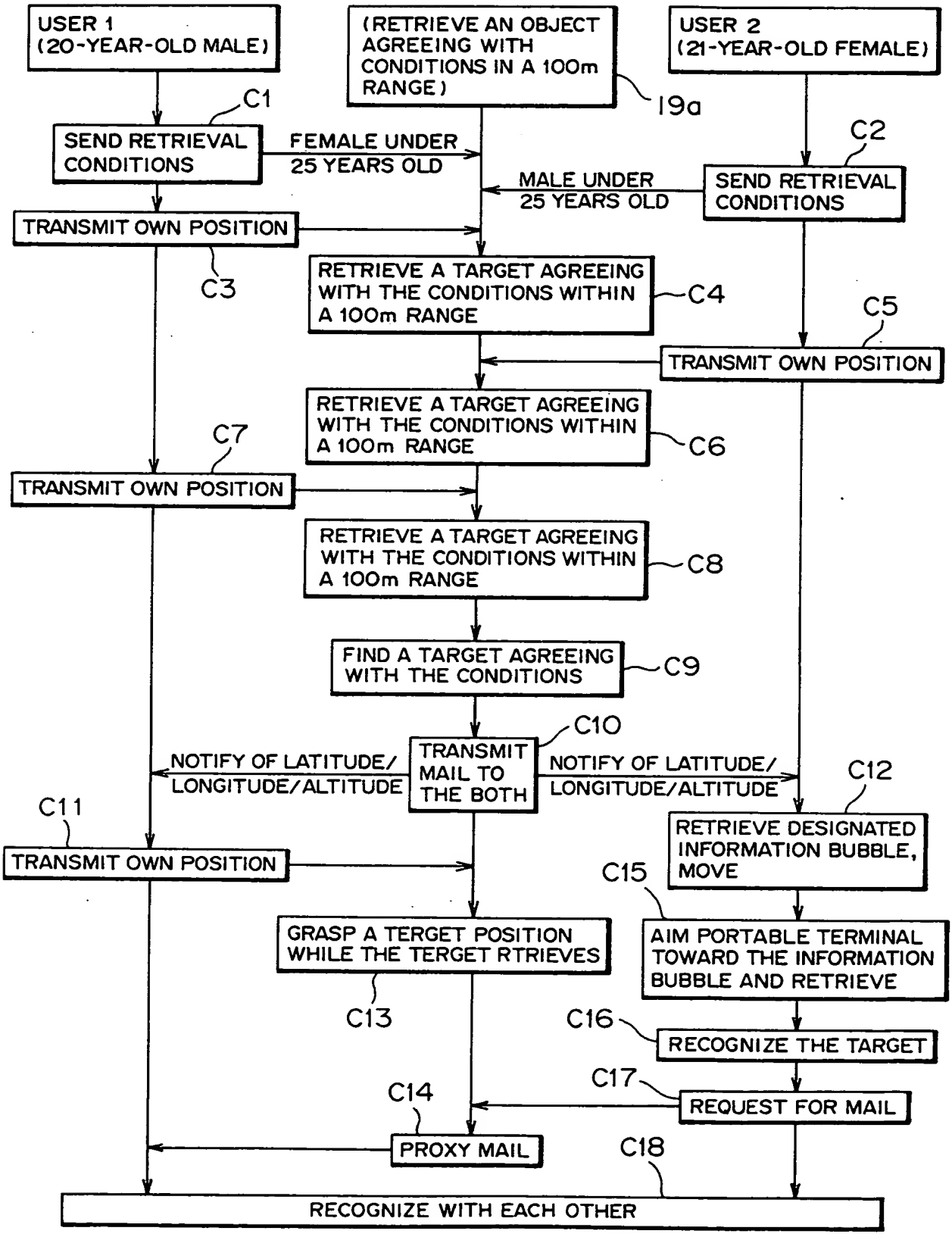


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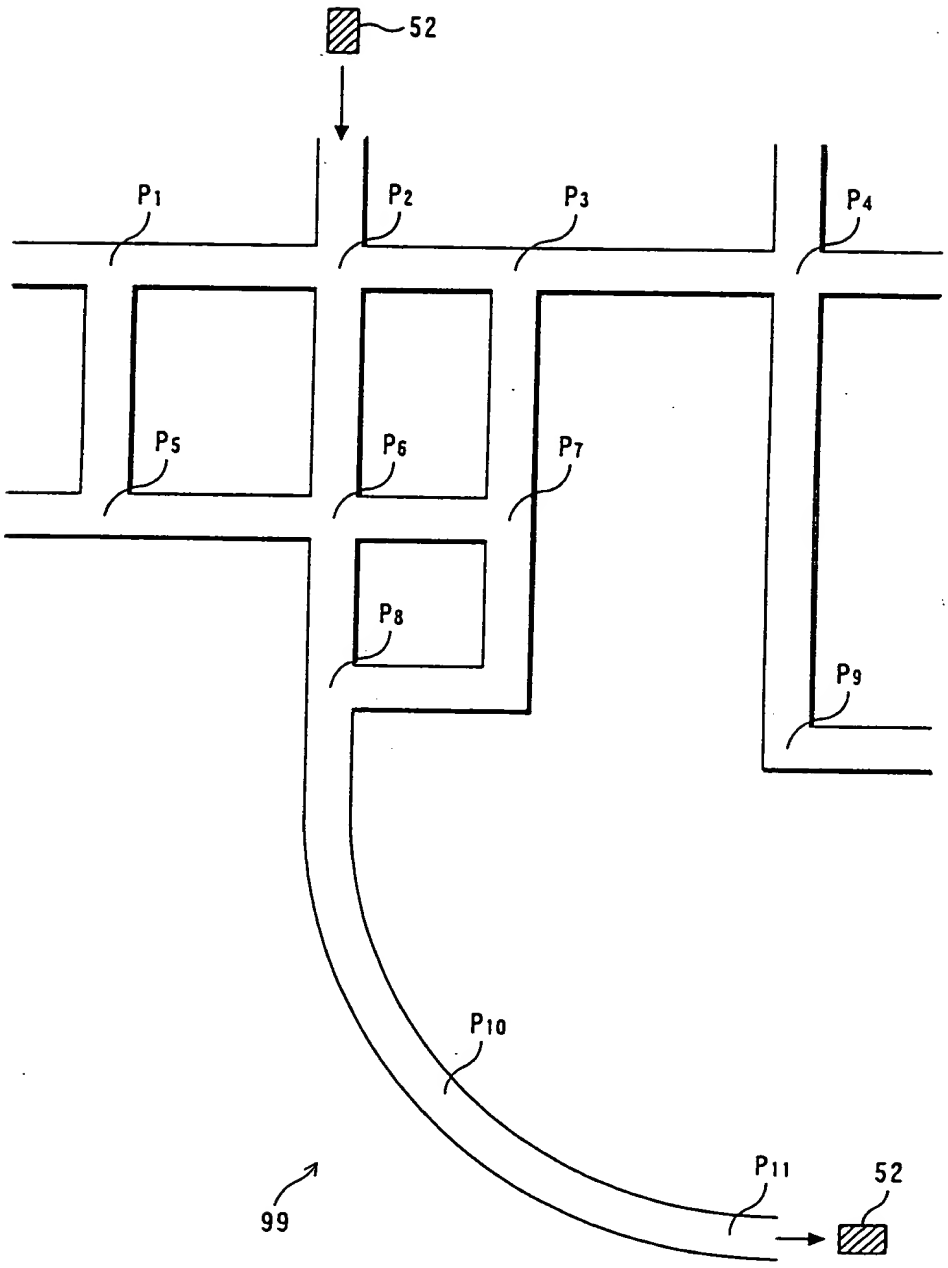
FIG. 30



0982721.062701

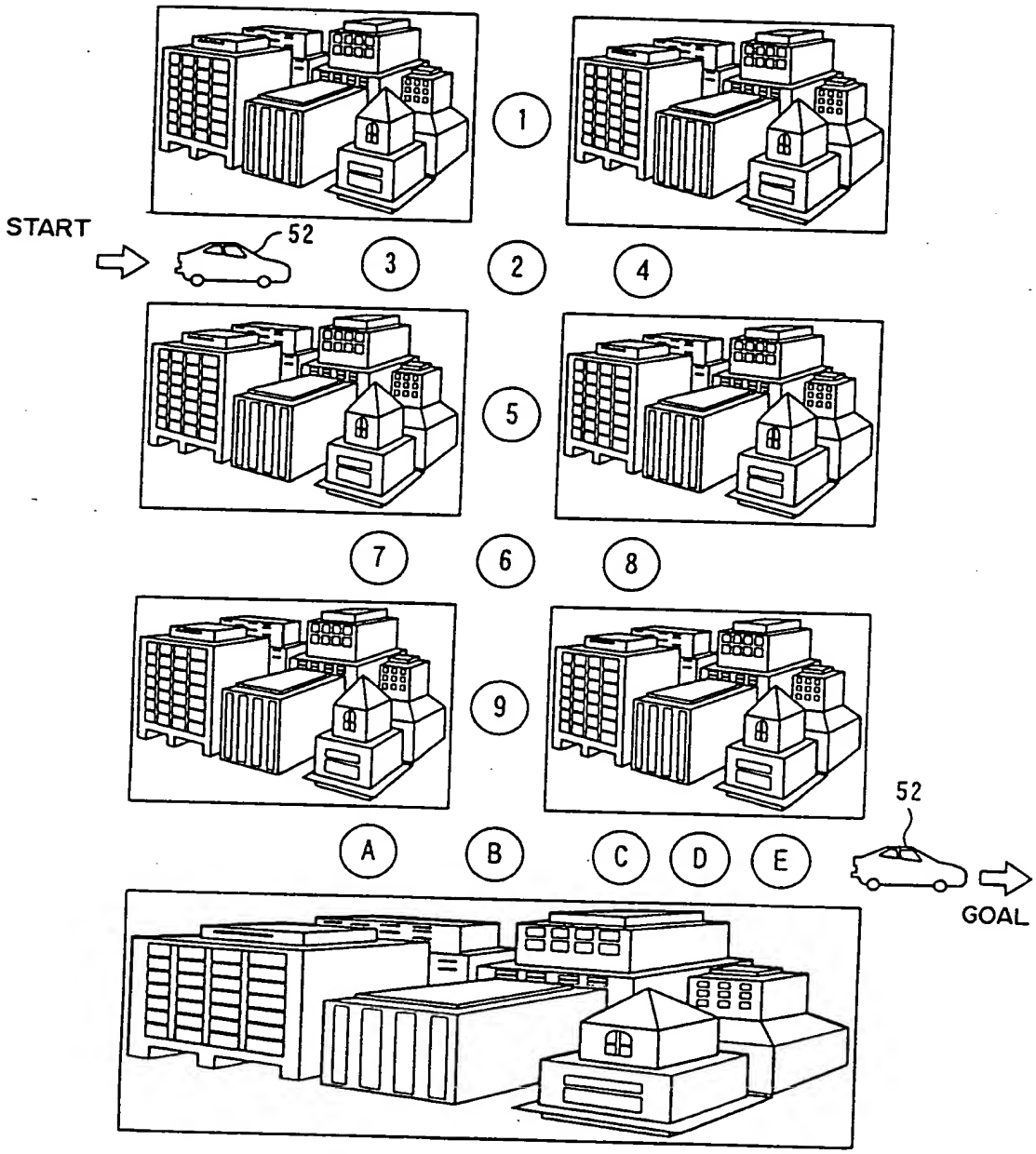



FIG. 31